

A TAXONOMIC STUDY OF THE GENUS *MYRMICA* LATREILLE FROM CHINA (HYMENOPTERA: FORMICIDAE)

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Abstract Eleven species of the ant genus *Myrmica* Latreille are reported in China. *M. gallieni* Bondroit is a new record species in China. *M. taibaiensis* sp. nov. is described from Mt. Taibai. A key based on worker caste is given for the 11 species.

Key words Hymenoptera, Formicidae, *Myrmica*, Taxonomy.

Species of the genus *Myrmica* Latreille. Usually construct medium size colonies under stones, logs or grass roots. About 140 species (subspecies, varietas) of the genus were described (Wu et Wang, 1995). According to Radchenko (1994), nearly 70 Palaearctic species of the genus were known. From 1996 to 1998, we investigated the ant fauna of Shaanxi Province in China and a new record species and a new species were discovered. To date, 11 species of the genus are known in China.

Standard measurements and indices are as defined by Bolton (1980) and Radchenko (1994):

TL (total length)—the total outstretched length of the individual, from mandibular apex to gaster apex.

HL (Head length)—the length of the head in full-face view, measured in a straight line from the anterior point of the median clypeal margin to mid-point of the occipital margin.

HW (Head width)—the maximum width of the head in full-face view, measured behind the eyes (excluding the eyes).

CI (Cephalic index) = $HW \times 100 / HL$.

SL (Scape length)—the maximum straight-line length of the antennal scape.

SI (Scape index) = $SL \times 100 / HW$.

FW (Frons width)—the maximum distance between frontal carinae.

FLW (Frontal lobe width)—the maximum width of the frontal lobes.

FI = $FLW \times 100 / FW$.

PW (Pronotal width)—the maximum width of the pronotum in dorsal view.

AL (Alitrunk length)—the diagonal length of the alitrunk in lateral view from the posterior base of the meta-pleural lobes to the anterior—dorsal border of the promesonotum (in females and males) or to the anterior border of the neck shield (in workers).

ED (Eyes diameter)—the maximum diameter of eye.

All measurements are expressed in millimeters. The type specimens of new species are deposited in the Insect Collection, College of Forestry, Northwest Sci-Tech University of Agriculture and Forestry.

Checklist of *Myrmica* species of China

1) *M. rubra* (Linnaeus)

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Linnaeus, 1758:580 (Formica); Nylander, 1846:927; Yarrow, 1955:113.

Distribution. China (Shanxi, Shaanxi); Europe, Siberia of Russia, Japan.

2) *M. ruginodis* Nylander

Nylander, 1846:929.

Distribution. China (Jilin, Heilongjiang); Japan, North Korea, North Europe.

3) *M. lobicornis* Nylander

Nylander, 1846:932.

Distribution. China (Heilongjiang, Jilin, Liaoning, Shanxi, Beijing, Neimenggu, Shaanxi); North Europe, Siberia of Russia.

4) *M. sulcinodis* Nylander

Nylander, 1846:934.

Distribution. China (Neimenggu); North Korea, North Europe.

5) *M. margaritae* Emery

Emery, 1889:502.

Distribution. China (Hunan, Hebei, Sichuan, Zhejiang, Anhui, Shaanxi); South-east Asia.

6) *M. jessensis* Forel

Forel, 1901:371.

Distribution. China (Heilongjiang, Jilin, Neimenggu, Hebei, Sichuan, Shaanxi); Japan, North Korea, South Korea.

7) *M. inezae* Forel

Forel, 1902:226.

Distribution. China (Shaanxi); India.

8) *M. angulinodis* Ruzsky

Ruzsky, 1905:689.

Distribution. China (Neimenggu); Japan, North Korea, Siberia of Russia.

9) *M. gallieni* Bondroit

Bondroit, 1920:302.

New record to China.

Distribution. China (Shaanxi); North Europe, west Russia.

10) *M. sinica* Wu et Wang

Wu et Wang, 1995:94.

Distribution. China (Shandong, Shaanxi).

11) *M. taibaiensis* sp. nov.

Distribution. China (Shaanxi).

Key to species of *Myrmica* of China

1. Antennal scape without any lamella and carina extension at the base 2
- Antennal scape with lamella or carina extension at the base 5
2. Antennal scape abruptly curved near the base. Frontal triangle with striae at upper portion, and lower portion smooth *M. gallieni* Bondroit
- Antennal scape gently curved near the base. Frontal triangle entirely smooth and shining 3
3. Body (excluding gaster) with coarsely reticulated rugae. Propodeal spines long, exceeding 0.5 mm. Gaster dominantly brownish yellow, lighter than the colour of head and alitrunk *M. margaritae* Emery
- Body of body not coarse; head and alitrunk with regular longitudinal rugae; rugae on occipital corner and nodes indistinct or dis-

- tinctly decreased. Propodeal spines short, not exceeding 0.4 mm. Gaster concolorous with the rest of body 4
4. Propodeal spines long, as long as or longer than the width between their base *M. ruginodis* Nylander
Propodeal spines short, distinctly shorter than the width between their base *M. rubra* (Linnaeus)
5. Antennal scape with distinct lamella extension at base 6
Antennal scape without lamella extension at base 7
6. Lamella of antennal scape large and upright with the antennal socket all revealed. Propodeal spines long, exceeding 0.3 mm *M. lobticornis* Nylander
Lamella of antennal scape very small but overlapping the antennal socket; half of antennal socket revealed. Propodeal spines short, not exceeding 0.25 mm *M. jessensis* Forel
7. Rugae of pronotum irregular; rest of dorsum of alitrunk with transverse rugae 8
Rugae of alitrunk longitudinal 9
8. Mandible with 8 teeth, the 2 apical teeth longer than the others. Propodeal spines curved downwards and projected out backwards. Colour of alitrunk lighter than that of head and gaster *M. taibaiensis* sp. nov.
Mandible with 9 teeth, the 4 apical teeth longer than the others. Propodeal spines somewhat upright. Alitrunk concolorous with head and gaster *M. inezae* Forel
9. Alitrunk and nodes with conspicuously coarse longitudinal rugae. First node clearly longer than broad in dorsal view *M. sulcinodis* Nylander
Rugae of alitrunk and nodes not as coarse as above and somewhat reticulated. First node about as long as broad or broader than long in dorsal view 10
10. First node nearly triangular with a narrow dorsal face in profile view; the node conspicuously broader than long in dorsal view. Propodeal spines clearly curved inwards and somewhat upright *M. angulinodis* Ruzsky
First nodes nearly trapezoid and with a broad dorsal area, the node about as long as broad in dorsal view. Propodeal spines projected out backwards and not curved inwards *M. sinica* Wu et Wang

Myrmica gallieni Bondroit (Fig. 1)

Myrmica gallieni Bondroit, 1920:302.

New record to China.

Distribution. China (Shaanxi Prov.); Denmark, Sweden, Finland, France, Russia.

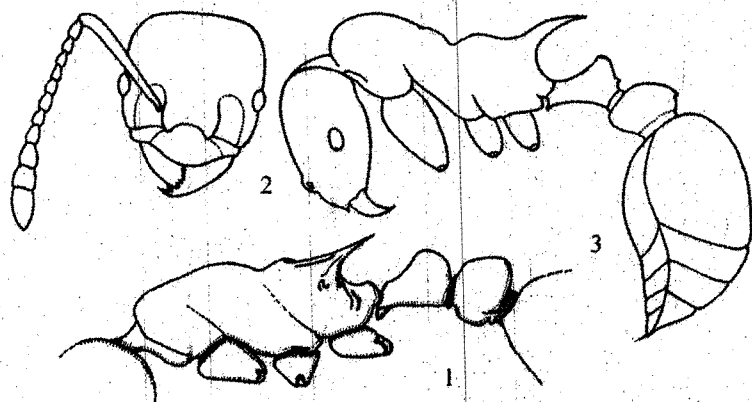
Measurements and indices of worker: TL 4.2-4.5, HL 1.29-1.32, HW 1.11-1.13, CI 86-87, SL 1.09-1.10, SI 97-98, FW 0.47-0.48, FLW 0.41-0.43, FI 90, PW 0.75-0.79, AL 1.80-1.82, ED 0.23, length of propodeal spines 0.53-0.55 ($n=6$).

Specimens examined: 3 workers, 2000 m Huaxian Co., Shaanxi Prov., 24 May 1996, WEI Jian-Rong; 3 workers, 2100 m, Taibai Co., Shaanxi Prov., 1 July 1996, WEI Jian-Rong.

Myrmica taibaiensis Wei, Zhou et Liu, sp. nov. (Figs. 2-3)

Holotype worker: TL 6.2, HL 1.40, HW 1.35, CI 96, SL 1.20, SI 89, FW 0.58, FLW 0.53, FI 91, PW 0.80, AL 2.10, ED 0.28, length of propodeal spines 0.57.

Head ovoid, with slightly convex sides and rounded occipital corners; occipital margin feebly convex. Mandibles broadly triangular with 8 teeth, the 2 apical teeth larger and sharp, and the rest are very small. Clypeus prominently convex. Eyes prominent, situated in the middle of the side. Antennal scapes surpassed occipital corners; scape angularly curved at base and with distinct carina on the external margin of the curved portion; antennal club 3-segmented, and the length of the last segment approximately equal to the two preceding segments together; antennal sockets large. Frontal carinae short and slightly divergent behind, the distance between them broad. Frontal lobes developed, Alitrunk long in profile view; promesonotal suture indistinct and metanotal groove distinct. Propodeal spines long and strong, acute at apex, curved downwards and projected out backwards. In profile view, petiole pedunculated; first node convex with distinct narrow dorsal face; anterior face slightly concave and nearly formed a right angle with dorsal face. Second node roundly convex and inclined backward.

Figs. 1-3 *Myrmica* workers

1. *M. gallieni* Bondr. workers, alitrunk in profile view, after Seifert, B(1988) 2-3 *M. taibaiensis* sp. nov. workers
2. head in full face view 3. body in profile view

Mandible, clypeus and frontal area longitudinally rugulose; the rest of head longitudinally striated, occiput with indistinctly reticulated striation and densely punctured. Rugae of pronotum irregular; rest of dorsum of alitrunk with transverse rugae; sides of alitrunk with longitudinal rugae. Petiole with several longitudinal rugae and densely punctured. Body with dense long erect hairs; antennae and legs with suberect short hairs.

Body in colour dark reddish-brown; mandibles (excluding external margin), antennal scapes, legs, sides of alitrunk and gaster yellowish-brown; hairs yellowish.

Paratype workers: TL 6.0-6.4, HL 1.40-1.42, HW 1.31-1.35, CI 93-96, SL 1.15-1.20, SI 86-89, FW 0.57, FLW 0.52, FI 91, PW 0.78-0.80, AL 2.00-2.20, ED 0.27-0.28, length of propodeal spines 0.56-0.57 ($n=6$).

Paratype Female: TL 6.3-6.6, HL 1.39-1.41, HW 1.33-1.35, CI 96, SL 1.18-1.20, SI 88-89, FW 0.57-0.58, FLW 0.50-0.52, FI 89-90, PW 0.80-0.83, AL 2.23-2.26, ED 0.29, length of propodeal spines 0.54-0.56 ($n=5$). Head with ocelli. Pronotum broad and short; mesonotum elongated; promesonotal suture distinct; metanotal groove distinct but not as deep as in worker. Gaster broader than of workers. The rest characters as worker.

Holotype worker, Mt. Taibai 2200 m, Taibai Co., Shaanxi Prov., nested in rotten trunk of tree, in the forest, 19 Aug. 1997, WEI Cong. Paratypes: 35 workers, 5 females, Mt. Taibai 2000 m, in rotten root in the forest, 27 Aug. 1997, WEI Cong.

The new species is close to *M. inezae* Forel. It differs from the later by the shape and number of mandible teeth, the shape of propodeal spines, and the colour of body.

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REFERENCES

- Wu, J and Wang, C 1995. *The Ants of China*. China Forestry Publishing House (in Chinese), Beijing. 214pp.
Bingham, C. T. 1903. *The Fauna of British India, including Ceylon and Burma. Hymenoptera*, Vol. II. Ants and cuckoo-wasps, Taylor and Francis, London. 506pp.
Pisarki, B. 1969. Myrmicidae und Formicidae. In: *Ergebnerzoologischen Forschungen von Dr. z. Kaszab in der Mongolei* (Hy-

- menoptea) Faun. Abh., Dresden, 2:295-316.
- Radchenko, A. G. 1994. New Palaearctic species of the genus *Myrmica* Latreille (Hymenoptera: Formicidae). *Memorabilia Zool.*, 48:207-217.
- Seifert, B. 1988. A taxonomic revision of the *Myrmica* species of Europe, Asia Minor, and Caucasia (Hymenoptera: Formicidae). *Abhandlungen und Berichte Des Naturkunde Museums Gorlitz*, 62(3):1-75.
- Weber, N. A. 1947. A revision of the North American ants of the genus *Myrmica* Latreille with a synopsis of the Palaearctic species. I. *Annals of Entomological Society of America*, 40:437-474.
- Weber, N. A. 1948. A revision of the North America ants of the genus *Myrmica* Latreille with a synopsis of the Palaearctic species, II. *Annals of Entomological Society of America*, 41:267-308.
- Weber, N. A. 1950. A revision of the North America ants of the genus *Myrmica* Latreille with a synopsis of the Palaearctic species, III. *Annals of Entomological Society of America*, 43:189-226.
- Wei, C, Zhou S-Y and Liu, M-T 1999. A new record species of the genus *Mymica* Latreille (Hymenoptera: Formicidae) from Shaanxi, China. *Entomotaxonomia*, 21(1): 60.

中国红蚁属分类研究

(膜翅目: 蚁科)

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摘 要

记述中国红蚁属 *Myrmica* Latreille 昆虫 11 种, 其中 1 种为中国新纪录种, 即盖列尼红蚁 *M. gallieni* Bondroit; 描述 1 新种, 太白红蚁 *M. taibaiensis* sp. nov.。新种与 *M. inezae* 相近, 其不同处为: 1) 新种上颚咀嚼缘具 8 齿, 端部 2 齿尖长, 从第 3 齿开始变为细齿, 后者上颚咀嚼缘具 9 齿, 端部 4 齿较粗大; 2) 新种并胸腹节刺指向斜后上方, 后者并胸腹节刺较直立; 3) 新种体色成双色, 胸部颜色明显淡于头部及腹部, 后者体色一致。文中编制了 11 个种的工蚁分种检索表。

关键词 膜翅目, 蚁科, 红蚁属, 分类.

中图分类号 Q 969.554.2